

Registration of Katy Lesion Mimic Mutant 1

The USDA-ARS released a lesion mimic mutant 1 (LMM1) of Katy (*Oryza sativa* L.) (Reg. no. GS-2, PI 636492) in 2004. The new mutant was induced by ethyl methane sulfonate (EMS) in the Arkansas rice cultivar 'Katy' (Moldenhauer et al., 1990). In the absence of pathogen attack, the mutant develops spontaneous lesions that resemble disease symptoms and hence is called lesion mimic mutant. The lesion mimic mutant displays phenotypes similar to the ones caused by the pathogen. Thus, lesion-mimic mutants are useful for investigating mechanisms of disease resistance and programmed cell death in plants (Takahashi et al., 1999).

Following the procedure described in Hu and Rutger (1992) approximately 7200 seeds of Katy were treated with 0.8% (v/v) EMS in 2001. The M₁ generation was planted at Stuttgart, AR, in the spring of 2001, and 1434 panicles were randomly harvested that fall. Five to seven seeds from each M₁ panicle were germinated in a 1.5-mL microcentrifuge tube in a 30°C dark incubator for 3 d. Germinated seeds were planted in a small pot in the greenhouse and LMM1 was identified in 2001. A cross between LMM1 (M₃) and Katy was made in 2002. An F₂ population of the cross of LMM1 and Katy segregated 1053 normal: 305 lesion mimic phenotype, a satisfactory fit ($P = 0.038$) to a 3:1 ratio, representative of a single recessive gene.

The expression of LMM1 also was examined in 2003 in the field, where it was similar to that in the greenhouse. The irregular lesion can be seen as early as at the two-leaf stage. The lesions develop from older to younger leaves throughout both vegetative and reproductive stages (Counce et al., 2000). The lesions can span the entire leaf and also can be seen on the sheath. In 24 greenhouse grown plants of each, LMM1 mutant had reduced tiller number, 3.3 ± 0.5 versus 4.7 ± 3.4 for the Katy parent, and reduced plant height, 71.2 ± 7.7 cm versus 83.4 ± 8.6 cm. The LMM1 phenotype is similar to that of the spontaneously occurring Sekiguchi mutant (Marchetti et al., 1983) and is different from spot leaf lesion mimic mutant *spL11* (Yin et al., 2000) and other lesion mimic mutants reported by Wang et al. (2004). Enhanced resistance was observed to both rice blast pathogen *Magnaporthe grisea* (Hebert) Barr and sheath blight pathogen *Rhizoctonia solani* Kühn (Jia et al., 2004). Subsequently, M₃ seeds were advanced by single seed descent to M₇ in the greenhouse.

Genetic stock amounts (1 g) may be obtained from Yulin Jia, Dale Bumpers National Rice Research Center (DB NRR), USDA-ARS, P. O. Box 1090, Stuttgart, AR 72160. Seeds also will be deposited in the Genetic Stocks-*Oryza* (GSOR) collection at the DB NRR, and in the National Center for Genetic Resources Preservation, 1110 S. Mason St., Ft. Collins, CO 80521-4500. If this genetic stock contributes to the development

of new genetic information, germplasm or cultivars, it is requested that appropriate recognition be given to the source.

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